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[PROJECT ADMIRE (ASSISTANCE FOR DECISION MAKING THROUGH INFORMATION RETRIEVAL IN EDUCATION),
PRINCIPAL'S MANUAL FOR PUPIL SCHEDULING BY COMPUTER.]

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A step-by-step process is described for registering students in junior and senior high schools by electronic computer and for providing them with conflict-free programs. The manual provides answers to questions concerning procedure, outlines features to improve administrative control, depicts various forms of data processing materials used, and enumerates various types of results. Directions are given for data preparation, with examples of forms used for course coding, student identification numbers, course requests, registration summation and conflict analysis, master schedule description, and student program adjustment. Sample lists of both junior and senior high school course offerings are appended. (JK)

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Principia



*Assistance for Decision Making through Information Retrieval in Education

Project - 4
Student Scheduling Application - 1
Principal's Manual

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Lincoln Public Schools
Lincoln, Nebr. 68501

A D M I R E

Project ADMIRE received first year approval from the USOE on June 15, 1967. It is the goal of this project to use a computer system as a tool to assist decision making through the collection, compilation, organization and storage of data to be retrieved and reported in appropriate format. Assistance will be given to teachers, administrators and board of education members by the systematic analysis and reporting of data related to students, employees, special services and financial data to enable them to better evaluate all aspects of the instructional program.

Through this project the Lincoln Public Schools will provide electronic data processing service, as well as instructional services, to all schools in the cooperating five county area - - Lancaster, Fillmore, Saline, Seward and York - - known as Educational Service Unit #6.

This five county area will serve as a pilot for the collection of data for the State of Nebraska Department of Education and cooperate closely with the Midwestern States Educational Information Project.

This project is designed so that at the end of the three year period, a per pupil cost factor can be determined, making it possible to continue all services to the area with total support from local sources.

The work presented or reported herein was performed pursuant to a grant from the United States Office of Education, Department of Health, Education and Welfare.

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U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION

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PROJECT ADMIRE PRINCIPAL'S MANUAL
FOR
PUPIL SCHEDULING BY COMPUTER

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FOREWORD

This publication represents an attempt to reduce to writing and to flow-charts the procedures and practices related to the registration and scheduling of junior and senior high school students by electronic computer. Although manuals today are generally administrative devices for the orderly categorizing of recorded facts, this manual is an orderly statement of actions, especially prepared as a reference guide to assist principals, secretaries, clerks, counselors, and data processing coordinators specifically charged with the responsibility of student scheduling.

This manual does not set aside the necessity for careful planning for automation. Most certainly it does not disregard the human factors which are so necessary to guide information through the various processing steps. Rather, it emphasizes the paramount place played by people who are working with a mechanical process. It carries with it the implication that the value to the school organization of any set of results will be in direct proportion to the adherence to the prescribed process and to the thoroughness with which material is prepared for each process.

Specifically, the purpose of this brochure will be to describe the step-by-step process to be followed in registering and scheduling students in junior and senior high schools, to provide an authoritative reference in answer to questions pertaining to procedure, to improve administrative control, to depict various forms of data processing materials used in obtaining and recording source data and to enumerate the various types of results that can be obtained.

For purposes of reference an inventory of available equipment, a suggested chronology, a glossary of commonly used terms, and examples of materials used are also provided.

INVENTORY OF AVAILABLE EQUIPMENT

THE LINCOLN PUBLIC SCHOOLS 1440 IBM COMPUTER SYSTEM CONSISTS OF:

- 1 1447 Console
- 2 1311 Disk Drives
- 1 1403 Printer
- 1 1442 Reader and Punch
- 1 1441 Central Processing Unit (16-K Memory Unit)
- 1 1446 Printer Control Unit

OTHER IBM AUXILIARY EQUIPMENT

- 1 1230 Optical Mark Scoring Reader
- 2 029 Key Punch
- 1 534 Key Punch
- 1 059 Verifier
- 1 083 Sorter

OTHER AUXILIARY EQUIPMENT

- 1 Burster (Moore)
- 1 Decollator (Tab Products)

SUGGESTED CHRONOLOGY

SEMESTER 1

February 1 - March 1	Administrative Planning Course Coding Student Request Forms
March 1 - March 21	Registration of Pupils
March 21 - April 7	Course Tally and Potential Conflict Matrix
April 7 - May 7	Master Schedule; First Scheduling Pass; Updated Master Schedule
May 7 - August 7	Interim Adjustment Period Schedule Alteration Student Program Adjustment
August 7 - August 21	Final Run for Semester 1 Programs

SEMESTER 2

Sept. 30 - Nov. 1	Student Requests, Updated Enrollment
Nov. 1 - Nov. 16	Review of Course Tally and Conflict Matrix
Nov. 16 - Dec. 1	Master Schedule; First Scheduling Pass; Updated Master Schedule
Dec. 1 - Dec. 20	Interim Adjustment Period Schedule Alteration Student Program Adjustment
Dec. 20 - Jan. 3	Final Run for Semester 2 Programs

GLOSSARY OF COMMONLY USED TERMS

Class Section A section is a particular class meeting at a particular time and place. Sections carry with them a three digit course code number.

Course A course is a group of one or more sections that are identical in material that is taught in the

Course Code Number A three-digit number identifying each course offered by the school. (Different levels of the course are treated as separate courses with discrete numbers.)

Pupil Request An indication by a pupil that he would like to be placed in a group of approved subjects.

Invalid Course Request A situation arising from an incorrect course code listing by the principal, a keypunch error or an incorrect selection by the pupil.

Tally Request A request from the principal to the Data Processing Center to provide a count of individuals by sex by grade registered into each of the complete list of coded courses submitted by the principal.

Potential Conflict Matrix A grid of one-section and two-section courses on which pupil registration is dispersed to determine which combination of courses will cause the greatest number of pupils to fail to register.

Period A period is a scheduled time increment in the school day of any given duration.

Master Schedule Principal's comprehensive plan of time, place, and instruction for each section of each course; a list of courses and their respective sections, including times, places of meeting and seat capacity.

Scheduling Pass An attempt by the computer to load the pupils into course sections described by the principal. Also described as Scheduling Run.

File Maintenance A force routine which enables the administrator to update the computer records thereby completing conflict-free schedules for all students.

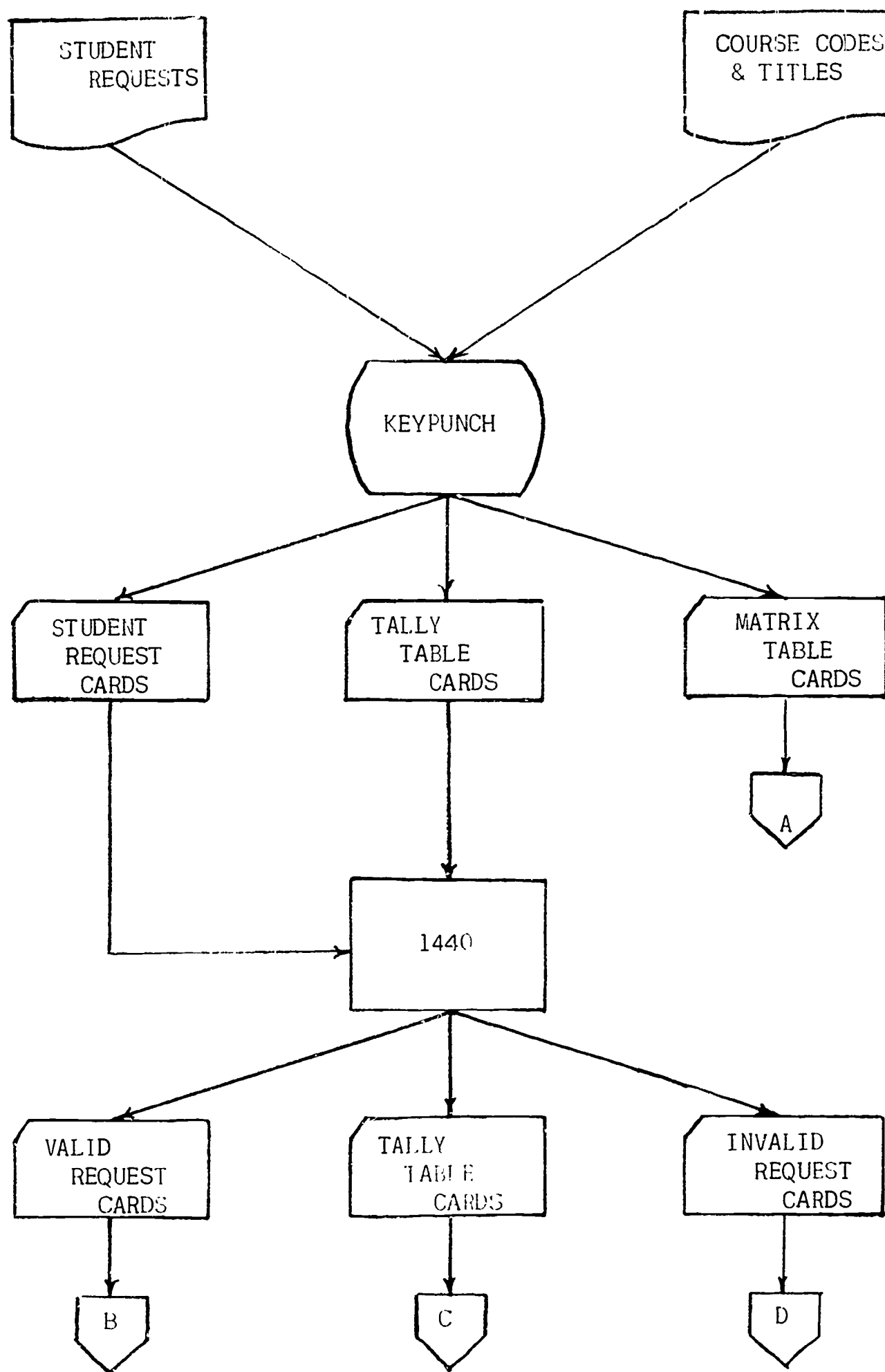
Irresolvable Conflict A scheduling impasse which occurs when more than one course offering requested by a student meets in (and only in) the same time segment.

STATEMENT OF OBJECTIVES

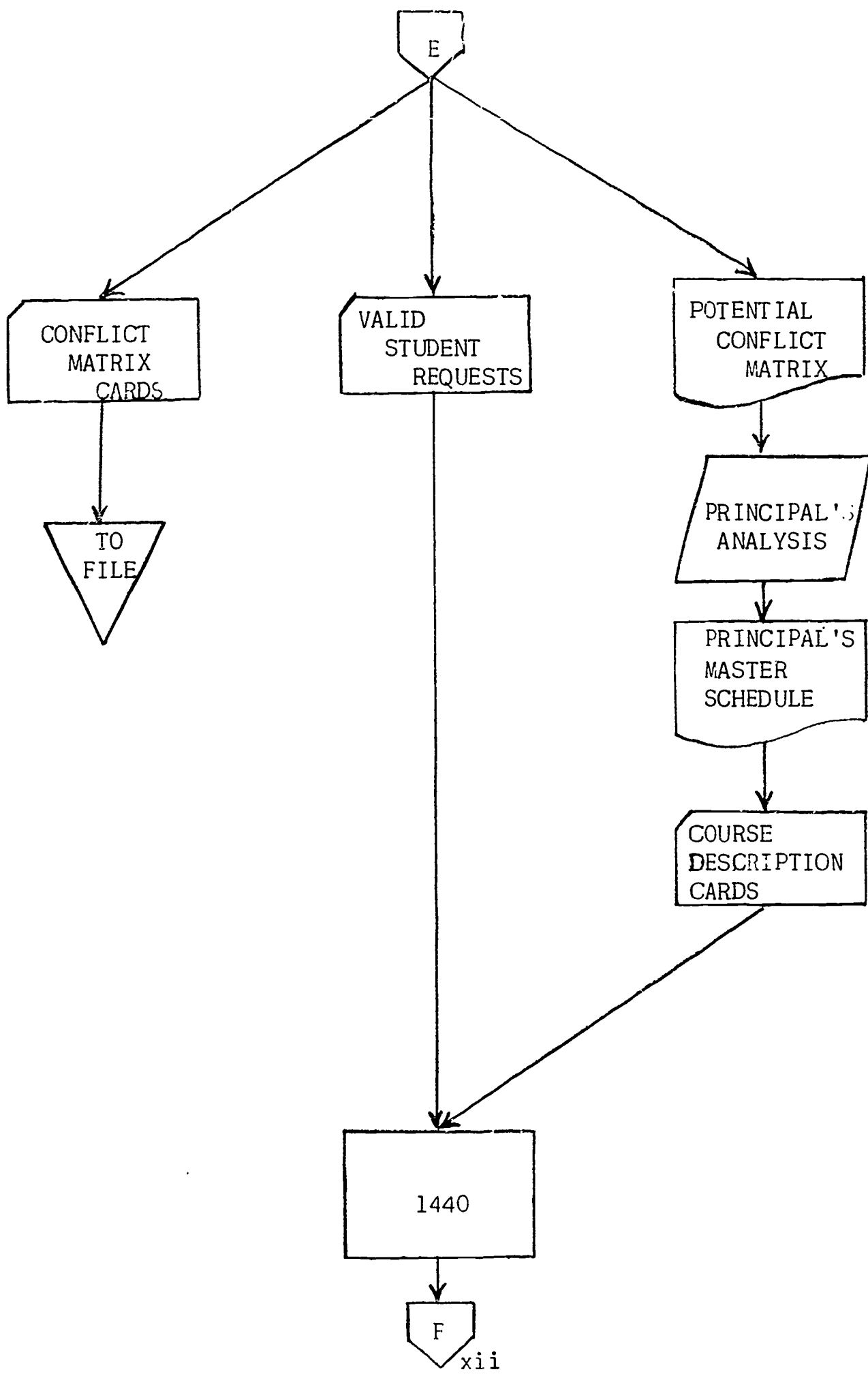
Because new and better methods evolve with new understandings, the following statement of goals or objectives to be accomplished by this manual is expected to change frequently. However, it is hoped that current processed information retrieved from computer data will result in the following outcomes:

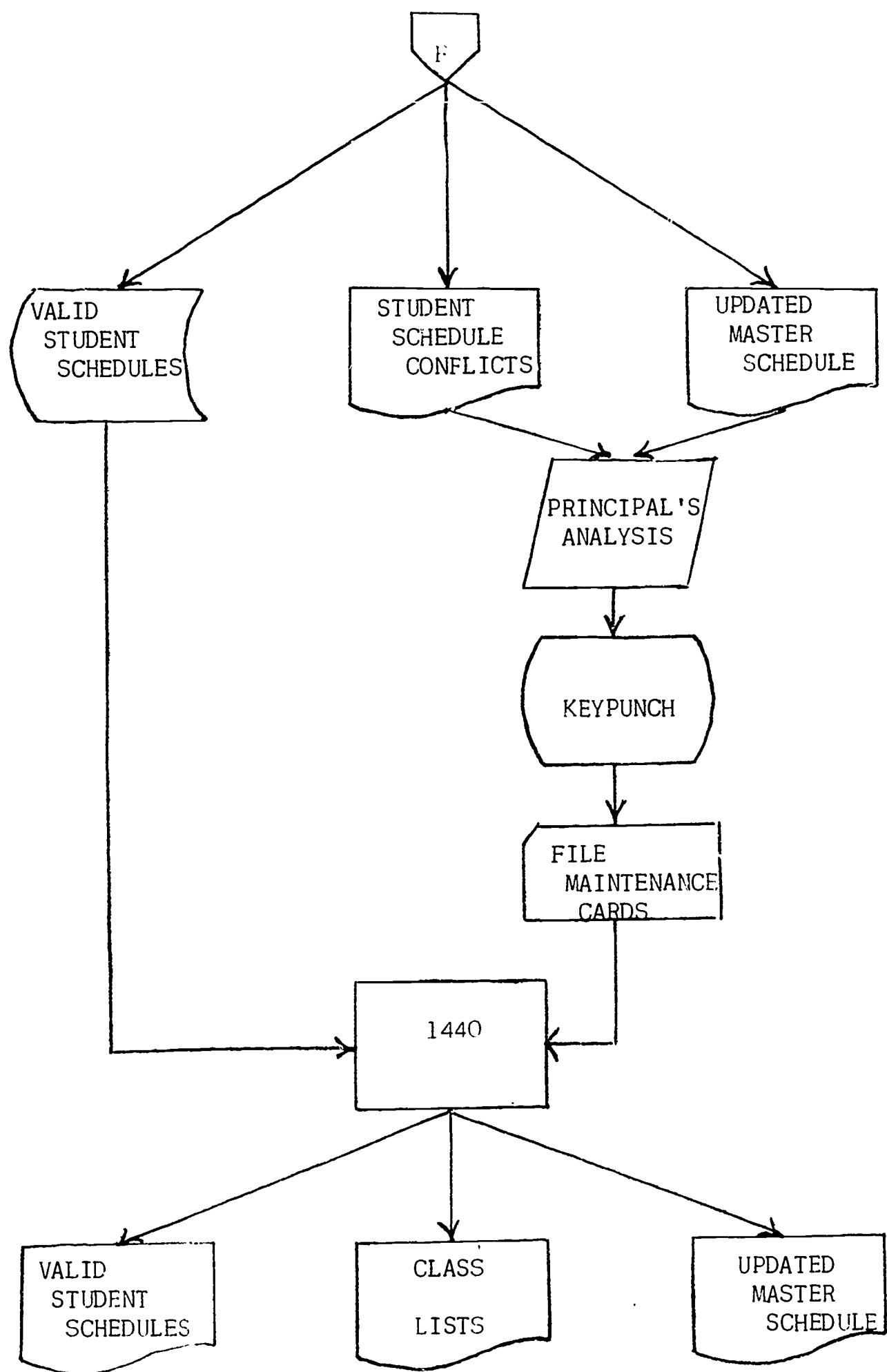
1. Time savings for members of the school staff through the reduction of routine clerical duties.
2. More emphasis on Spring registration which should result in more individual student counseling.
3. More parent participation in course selection of individual student programs as a result of the counseling.
4. Closer scrutiny and refinement of curriculum offerings.
5. Improved personnel relationship involving more definite selection, optimum assignment to major preparation field and balanced teaching loads.
6. Better room utilization and scheduling of existing facilities.

GENERAL FLOW CHART SHOWING REGISTRATION
AND SCHEDULING PROCEDURES









INTRODUCTION

The following service offered through Project ADMIRE is detailed in a series of steps designed to give freedom and flexibility to participating school administrators in preparing conflict-free student programs. The significant advantage of this method of student scheduling lies in the "random access capabilities" of the computer. Through this capability the inherent disadvantage of "arbitrary assignment" (to section) is kept at a minimum. This is possible because of the machine's ability to schedule first those students who requested a number of "single-section" courses and at the same time maintain a balanced population in "multiple-section" subjects. Through the additional service of a conflict matrix, potential impasses encountered in a fixed master schedule can be anticipated and avoided. Even after a school has been scheduled it is possible through the file maintenance run to change the schedule of students. The result is the possibility of all programs being conflict-free.

The versatility of the TARS (Tally, Analysis, Registration, Scheduling) program is enhanced by the availability of twelve useable time increments (periods) per day. The administrator may use these twelve time increments to build a comprehensive program, including in it lunch periods and study hall assignments as well as student course requests. Complexity of program, however, is not a necessity for machine programming, since any school program which can be hand scheduled can also be scheduled by the TARS facility.

ADMINISTRATIVE PLANNING

DATA PREPARATION

All data (information) prepared for the Data Processing Center should be carefully entered on proper forms and according to instructions in this procedure manual. In days when instant duplication of printed materials has become a reality, the suggestion is made that the principal keep duplicate copies of key documents related to the registration and scheduling processes.

Course Coding. Any program of student scheduling starts with the enumeration of the course offerings in the curriculum. Since the course offering must be interpreted to the computer, each unique organization of subject matter, or student activity, must be given a three digit number. This is called a course code number.

For purposes of uniformity it is customary to divide course offerings into broad areas and to assign blocks of numbers to the broad groups. The Lincoln Public Schools have generally divided course offerings thus:

- 001 - 099 Optional classes, or numbers reserved for principals.
- 100 - 199 Special numbers (junior high schools), Business Education (senior high schools).
- 200 - 299 Language Arts, Speech, Drama, Journalism.
- 300 - 399 Fine Arts, Vocal and Instrumental Music, Art.
- 400 - 499 Practical Arts, Home Economics.
- 500 - 599 Foreign Languages.

600 - 699 Mathematics.

700 - 799 Science.

800 - 899 Social Studies.

900 - 999 Physical Education, Health, Miscellaneous.

For purposes of convenience, odd numbers are generally assigned to first semester courses, even numbers to second semester courses. Arrangement for numbers which designate courses continuing through both semesters is also included. For example:

First Sem.	Second Sem.	Both	Title of Course
201	202	203	7th English--- 7th Grade English.

It should be duly noted that any one semester course offered both semesters should carry a different number each semester.

For example:

First Sem.	Second Sem.	Title of Course
277	278	Journalism
421	422	M. Drafting

For purposes of reference, lists of junior high school and senior high school offerings, together with a suggested numbering system, appear at the end of the manual as Appendix A and Appendix B. Suggested abbreviations of course titles which may be used for purposes of recording grades on the permanent record and which meet the machine limitation of thirteen (13) spaces have been inserted in the lists for convenience.

Student Identification Number. The student identification number is highly important in sorting procedures for many data processing applications. Procedures for assigning pupil identification numbers may be obtained from the Coordinator of Data Processing.

In the Lincoln Public Schools, pupils in grades two through twelve have already been assigned six digit identification numbers. The first two digits are the year in which the pupil is expected to graduate. For example: a pupil enrolled in grade eleven in 1967-68 would have a number beginning 69----, a pupil enrolled in grade nine in 1967-68 would have a number beginning 71----, etc. Care should be taken when instituting procedures for assigning pupil identification numbers to pupils who were "non-enrolled" in the Lincoln system that the legal name (only) is used.

In Area 6 schools, other than the Lincoln Public Schools, six digit identification numbers will be assigned. Such numbers may be machine assigned to permit school personnel to enter new students into the system in approximately alphabetical sequence. For example: 000500--Abbott, 000600--Adams, 000700--Allen, etc.

If an Area 6 school has already assigned pupil identification numbers, the numbers will be hand punched to accomodate the system. However, any system so instituted should probably be amenable to the insertion of new students into an alphabetical sequence.

Course Request Form. A student Course Request Form will be completed for each student in the school. The school will prepare a

listing of the complete offerings and course codes for that particular school. While each school is allowed the latitude of selecting those course codes and titles necessary for its own situation, every effort should be made to be consistent with the revised list of course offerings which meet the thirteen (13) space limit. Reference is again made to Appendix A and Appendix B for purposes of determining course codes and course titles.

For purposes of uniformity and convenience to keypunch operators, the following heading is required at the top of each

student's Course Request Form:

Student Ident.	Alpha	Name (last name first)	Grade	Sex	School No.

Examples of typical Course Request Forms and instructions for same appear as Figures 1 and 2 (junior high school) and Figures 3 and 4 (senior high school). Customarily a request form is produced for each grade although the entire listing of course offerings by a school for all grades may appear on one sheet. Course Request Forms are frequently color-coded by grades for convenience in sorting.

Any other information as each school may require and such instruction as is pertinent to the individual situation is left to the discretion of the individual school.

REGISTRATION SUMMATION AND CONFLICT ANALYSIS

When each student has been properly registered the completed Course Request Forms are forwarded to the Data Processing Center to be summarized.

FIGURE 1

SHOWING TYPICAL COURSE OFFERINGS AND REGISTRATION
INSTRUCTION IN A LINCOLN JUNIOR HIGH SCHOOL
GRADES 7, 8, 9

MILLARD LEFLER JUNIOR HIGH SCHOOL COURSE OFFERINGS
1968-1969

Each pupil must register for the required subjects and the electives necessary to complete a six-period day. A six-period day begins at 8:45 a.m. and closes at 3:15 p.m. A pupil may elect a seventh period upon the approval of the counselor. The seven period day begins at 8:00 a.m. and closes at 3:15 p.m.

<u>Grade 7</u>	<u>Grade 8</u>	<u>Grade 9</u>
Required Subjects (1-5)	Required Subjects (1-5)	Required Subjects (1-4)
1. English	1. English	1. English
2. American Studies	2. American Studies	2. World Studies
3. Arithmetic	3. Arithmetic or Algebra	3. Algebra or Gen. Math
4. Science and Home Economics or Industrial Arts (Alternate semesters)	4. Health and Ph. Ed.	4. Science and Elective (1 semester Science required)
5. Physical Education and Orientation* (2 sem.) (Alternate daily)	5. Home Economics or Industrial Arts and Elective Subject for alternate semester	5. Elective Subject
6. Elective Subject (Select 1 each semester) Art 1-2 Boys Chorus Girls Chorus Instrumental Music	6. Elective Subject (Select 1 each semester) Art 1-2 Boys Chorus Crafts 1 Drafting 1 Girls Chorus Instrumental Music Metal Work 1 Science (Earth) Small Engines Space Science Speech 1-2 Typing 1-2	6. Elective Subject (Select 2) Art 1-2 Boys Chorus Crafts 1 Drafting 1 Electronics 1 French 1-2 or 5a-6a German 1-2 Girls Chorus Home Economics 1-2 Instrumental Music Journalism 1 Metal Work 1 Physical Education Science: Earth-1 semester I.P.S.-2 semesters Small Engines Space Science Spanish 1-2 Speech 1-2 Student Assistant (Select one) Audio-visual Asst. Library Asst. Nurse Asst. Office Asst. Phys. Ed. Asst. Teacher Asst. Typing 1-2 Woodwork 1
7. Additional Period Subject Select from No. 6	7. Additional Period Subject Select from No. 6	7. Additional Period Subj. Select from No. 6
* May elect Study Hall (2 semesters)		

FIGURE 2

SHOWING TYPICAL STUDENT REQUEST FORM FOR
LINCOLN JUNIOR HIGH SCHOOL

MILLARD LEFLER SCHOOL 1968-1969				
Stud. No.	H.R.	Last Name	First	
				09 B G 15
1st Sem.	2nd Sem.	Year	Hours	Subject
001	002		_____	No Optional Period
111	112		_____	Office Assistant
113	114		_____	Audio-Assistant
115	116		_____	Teacher Assistant
		251	_____	English
285	286		_____	Speech 1
	288		_____	Speech 2
289	290		_____	Journalism
		313	_____	Band
		314	_____	Adv. Band
		317	_____	Orchestra
359	360		_____	Boys Chorus
371	372		_____	Girls Chorus
405			_____	Woodwork 1
411			_____	Metals 1
417	418		_____	Drafting 1
	426		_____	Electronics 1
429	430		_____	Crafts 1
434	435		_____	Small Engines
443	444		_____	Home Economics
505	502		_____	Art 1
507	508		_____	Art 2
		545	_____	French 1-2
		549	_____	French 5a-6a
		553	_____	Spanish
		557	_____	German
		639	_____	General Math
		643	_____	Algebra
		647	_____	Geometry
715	716		_____	Space Science
		726	_____	I.P.S. Science
749	750		_____	Earth Science
		835	_____	World Studies
943	944		_____	Phys. Ed. - Boys) 1 sem.
955	956		_____	Phys. Ed. - Girls) only
961	962		_____	Typing 1
	964		_____	Typing 2
Must Total 70			_____	

FIGURE 4

SHOWING TYPICAL SENIOR HIGH SCHOOL REQUEST FORM
INCLUDING WORK SHEET FOR STUDENT SELECTION

REQUEST FOR COURSES:--Lincoln Northeast High School--
1968-1969

Student Code
Alpha
Name (Last name first)
Grade Sex

			1		0 3
--	--	--	---	--	-----

Schedule:

First Semester		Second Semester	
Per.	Course Title No.	Per.	Course Title No.
1		1	
2		2	
3		3	
4		4	
5		5	
6		6	
7		7	

First Semester Course Numbers

001	057	135	263	305	343	401	431	483	563	691	707	843	923
002	059	137	265	307	353	405	433	501	565	692	721	845	931
003	070	139	267	309	355	409	435	503	567	693	731	847	933
031	071	171	271	310	363	411	441	505	601	664	801	861	935
033	072	173	273	313	365	415	443	507	605	695	807	871	931
051	073	201	275	331	367	417	445	521	609	696	821	881	953
052	105	211	277	333	369	419	471	523	613	697	827	901	963
053	111	221	279	335	371	421	473	525	615	698	829	903	967
054	115	241	281	337	373	423	475	543	619	701	831	905	975
055	131	243	301	339	375	425	481	561	621	703	835	921	997
056	133	247	303	341	377	427							999

Second Semester Course Numbers

001	067	135	266	307	354	405	432	483	563	691	707	844	924
002	069	137	268	309	356	410	433	501	565	692	721	846	932
003	070	172	271	310	364	411	435	503	567	693	731	848	934
032	071	173	273	316	366	415	442	505	601	694	802	861	936
034	072	201	275	331	368	417	443	507	605	695	807	871	952
061	073	211	278	333	369	419	445	521	609	696	821	881	954
062	105	221	279	335	372	422	472	523	613	697	827	902	964
063	111	241	281	337	373	423	473	525	615	698	830	904	968
064	115	243	302	339	375	425	475	543	621	701	832	906	975
065	131	247	304	341	378	427	482	561	622	703	835	922	998
066	133	264	306	343	401								999

Parent's name _____ Address _____ Phone _____

KEYPUNCH OPERATION.

Step 1. The Data Processing Center, using the Student Request Form, will punch each student's registration into machine-readable cards. Figure 5 is an example of a student's request in data processing form.

Step 2. Using Form EDP-6801, (see Figure 6) each principal will provide the Data Processing Center with a coded list of all courses at the school. On this form he will also designate course codes in which "one-section" and "two-section" courses are anticipated. The number of "one-section" and "two-section" courses designated should be limited to fewer than one hundred courses since these numbers will be used in forming the conflict matrix. The information on Form EDP-6801 will be punched into two "decks" called the Tally Table Cards and the Matrix Table Cards.

COURSE REQUEST TALLY AND CONFLICT MATRIX.

The comparison of student requests against the Tally Table Cards provides a validation procedure which will result in the rejection of those improperly coded subjects and/or invalid student requests.

After all invalid course codes and student requests have been resolved and deleted the Data Processing Center will provide the school with a count (tally) of the student requests for each course, by sex and by grade. Figure 7 shows a typical report back to the school.

From the course tally a determination may be made by the principal as to the number of sections required for each subject. This information will also give the principal direction as to proposed

FIGURE 5

SHOWING A TYPICAL EXAMPLE OF A STUDENT'S REGISTRATION
PUNCHED INTO A MACHINE-READABLE COMPUTER CARD

[illegible]

FIGURE 6

SHOWING FORM EDP-6801 TO BE USED FOR COMPLETE LISTING
OF CODED COURSE OFFERINGS AND FOR REQUESTING
A COURSE TALLY AND A CONFLICT MATRIX

FORM EDP-6801

LIST OF CODED COURSES:
TALLY AND MATRIX REQUEST:

SCHOOL NAME MILLARD LEFLER TOWN LINCOLN

District No. 1

Building No. 15

MATRIX REQUEST
Check, if course
desired in conflict
matrix

COURSE NO.
list in
ascending
order

✓
✓
✓
✓
✓
✓
✓
✓
✓
✓
✓

0	0	2
1	1	2
1	1	4
1	1	6
2	0	3
2	0	7
2	1	1
2	2	7
2	3	1
2	3	5
2	5	1
2	8	6
2	8	8
2	9	0
3	1	1
3	1	3
3	1	4
3	1	5
3	1	7

N	O		O	P	T	I	O	N	A	L			
O	F	F	I	C	E		A	S	S	T			
A	V		A	S	S	T							
T	E	A	C	H	E	R		A	S	S	T		
E	N	G	L	I	S	H		7					
E	N	G	L	I	S	H		7		H			
E	N	G	L	I	S	H		7		L			
E	N	G	L	I	S	H		8					
E	N	G	L	I	S	H		8		H			
E	N	G	L	I	S	H		8		L			
E	N	G	L	I	S	H		9					
S	P	E	E	C	H		1						
S	P	E	E	C	H		2						
J	O	U	R	N	A	L	I	S	M				
P	R	E	P		B	A	N	D					
B	A	N	D										
A	D	V		B	A	N	D						
P	R	E	P		O	R	C	H	E	S	T	R	A
A	D	V		O	R	C	H	E	S	T	R	A	

staff needs. The tally may also suggest opportunities to alter student requests so that enrollment for one-semester classes will balance between the semesters.

The Data Processing Center will prepare a conflict matrix using the raw data provided by student registration and sections selected by the principal. The conflict matrix will show the potential single and double section classes which will cause the most students to fail to schedule. The conflict matrix allows the principal to construct the master schedule so that these single and double section courses with the greatest number of potential conflicts are not scheduled the same period.

Figure 8 shows a typical dispersal of course tallies on a conflict grid. It should be noted that these represent only potential conflicts and that most of these may be resolved or avoided through schedule making. In a few instances where these cannot be avoided in schedule making it is sometimes necessary to re-counsel and re-register the student. Usually this takes place after the first scheduling pass but obvious conflicts may be dealt with immediately.

MASTER SCHEDULE DESCRIPTION

Step One.

The principal will prepare a master schedule making careful use of the information in the course tally and the conflict matrix.

The breakdown in numbers of pupils from each grade registered in each subject (as shown in the course tally, Figure 7) will give him an accurate, if not exact, count of his entire enrollment for each period of the day and a guarantee that he has provided enough class

FIGURE 7
SHOWING A TALLY OF COURSE OFFERINGS
BY GRADE BY SEX

L. FLEET								PAGE 1
#	COURSE	TOTAL	7TH	8TH	9TH	MALE	FEMALE	
052	NO OPTIONAL	704	263	201	240	385	319	
112	OFFICE ASST	18	1		17	2	16	
114	A V ASST	24			24	18	6	
116	TEACHER ASSI	44			44	18	26	
203	ENGLISH 7	248	247	1		132	116	
207	ENGLISH 7 H	58	58			20	38	
211	ENGLISH 7 L	19	19			13	6	
227	ENGLISH 8	229		229		125	104	
231	ENGLISH 8 H	58		58		16	42	
235	ENGLISH 8 L	26		26		17	9	
251	ENGLISH 9	288	1		287	167	121	
286	SPEECH 1	32		13	19	18	14	
288	SPEECH 2	44		18	26	13	31	
290	JJOURNALISM	22			22	10	12	
311	PREP BAND	54	54			34	16	
313	BAND	33		28	5	24	9	
314	ADV BAND	44		18	26	28	16	
315	PREP ORCHESTRA	31	31			16	15	
317	ADV ORCHESTRA	35		21	14	22	13	
340	GIRLS CHORUS 7	75	75				75	
360	BOYS CHORUS 7,8 & 9	137	47	44	46	136	1	
372	GIRLS CHORUS 8 & 9	93	1	43	49		93	
402	IND ARTS 7	85	85			85		
404	IND ARTS 8	84		84		83	1	
408	WOODWORK 2	43			43	43		
418	DRAWING	38		15	23	38		
426	ELECTRONICS 2	20	1		19	20		
430	CRAFTS	26		10	16	25	1	
440	HOME EC 7	79	79				79	
442	HOME EC 8	79		79			79	
444	HOME EC 9	29			29		29	
502	ART 1 - 7,8, & 9	54	34	6	14	14	40	
504	ART 2-7	114	114			73	41	
508	ART 2-8 & 9	75		33	42	34	41	
541	FRENCH 2	29		29		8	21	
545	FRENCH 1 & 2	15			15	6	9	
549	FRENCH 3 & 4	17			17	4	13	
553	SPANISH	75			75	29	46	
557	GERMAN	31	1	1	29	22	9	
603	ARITH 7	273	272		1	144	129	
607	ARITH 7 H	31	31			11	20	
611	ARITH 7 L	21	21			11	10	
619	ARITH 8	257		255	2	123	134	
627	ARITH 8 L	27		27		21	6	
631	ALGEBRA 8	31		31		16	5	
637	GENERAL MATH	57			57	33	24	
643	ALGEBRA 9	211			211	119	92	
647	GEOMETRY	22	1		21	17	5	
702	SCIENCE 7	161	161			81	80	
715	SPACE SCI	23		10	13	20	3	
718	SCIENCE 9	28			28	26	2	
728	HEALTH ED	152		152		76	76	

situations to house all of his pupils each period. Boy-girl distribution in each grade is easily determined by using the breakdown for any subject required of all pupils in that grade.

The conflict matrix is to be used for constant reference with regard to "singleton" sections and their potentiality in causing student schedule conflicts.

Step Two.

The principal will prepare a master schedule description sheet listing each section of each course, the period the class meets, the room number, the name of the teacher and the number of students to be assigned to each section. Instructions for filling out the course description sheet are found in Figure 9. A typical cross section of a completed schedule sheet is shown in Figure 10.

Although listing of courses on the master schedule description sheet in ascending numerical order is not required, most principals follow the procedure of noting the number of sections for each course on the margin of their tally sheet which is displayed in numerical order (see Figure 7) and using this as a final check, comparing the total number of entries on the course description sheet with the total of sections provided on the tally sheet with the total number of sections provided on the master schedule.

FIRST SCHEDULING PASS

The first scheduling pass is a trial run which gives an overall view of the versatility of the proposed master schedule. More than one scheduling pass is possible, if needed, before the final run but, generally, one trial run is sufficient. The result of the first

FIGURE 8

SHOWING A TYPICAL REGISTRATION DISPERSAL OF
COURSE TALLIES ON A CONFLICT GRID

207 211 231 235 286 288 290 (311) 313 314 (315) 317 (340) 372 408 418 426 430 444 (502) 508 541 545																
(207) 058				<u>010</u>		<u>013</u>		<u>014</u>				<u>009</u>				
211	019			305				002				003				
231	058	003 004		006 007		007		014		001		001 005 013				
235	026	001		001 002				005 002		002		001 001				
286		032 001		002 004		001		001 001		001 001		001 003 002 001				
288		044 004		001 002		001		007 003 004 001		004		002				
290		022				001		006 001 002 001		005		002 001				
311				054				007 001				001				
313				033				001 001				001 004				
314				044				004 003 002 001		003 002		001				
315						031		002				001				
317						035		002 001 002		001 002 001						
340								075								
372								093		008 001 007 004 005						
408								042 008 002 001		001 003 002						
418	INTERPRETATION (LINE ONE)										038 002 002		001			
418	COURSE 207, WHOSE ENROLLMENT IS (058), APPEARS										020 001		002			
426	TO HAVE POTENTIAL CONFLICTS WITH COURSES 311 (010),															
426	315 (013), 340 (014) AND 502 (009).															
430	COURSES 340 AND 502 MAY BE DISREGARDED SINCE THEY ARE										026 001 001 004		001			
444	SECOND SEMESTER COURSES (EVEN NUMBERED). BUT CAREFUL ATTENTION										029 001 003		002			
444	SHOULD BE PAID TO COURSES 311 AND 315 SO THAT THEY DO NOT APPEAR															
502	IN THE SAME PERIOD AS COURSE 207.										054		001			
508	INASMUCH AS THERE ARE (058) ENROLLED IN COURSE 207, IT IS REASONABLE										075 004 002					
508	TO ASSUME THAT THERE WILL BE TWO SECTIONS. IN THIS SITUATION THE CHANCE															
541	FOR CONFLICT IS REDUCED TO A MINIMUM AND THE POTENTIAL CONFLICTS (IN THIS										029					
541	INSTANCE) MAY BE DISREGARDED.															
545															015	

FIGURE 9
SHOWING A LIST OF INSTRUCTIONS FOR COMPLETING
COURSE DESCRIPTION SHEET

COMPLETING THE COURSE DESCRIPTION FORM

Columns 1 to 4

The number of seats available for that particular classroom. Even though there are four positions for number of seats, the maximum allowed by the program is 999 seats in one section.

Column 5

The semester code for each semester. All sections within any course number must have the same semester code.

Columns 6 to 8

The three digit course offering codes from 001 to 999.

Columns 9 & 10

Section number within course offering code. The first section must be 01. Those following must be in sequence with no omissions or blanks.

Columns 11 to 24

Course title. All 14 positions may be used and will be printed on the student schedule forms. The course should be completely defined, however, in the first 10 positions.

Columns 25 to 27

The number of credit hours given for successful completion of the course for one semester. Columns 25 & 26 contain the integral portion of the value, and column 27 contains the decimal portion.

Column 28

The period designation in this column is for the convenience of the person making the master schedule. It will not be punched into the master cards. The number (or numbers) in this column, when compared with the "period-day code" field (or fields) completed, provides a convenient check on accuracy.

Column 29

Blank

Columns 30 to 32

Teacher designation as desired by the school.

Columns 33 to 35

Room number or description.

FIGURE 9 (continued)

Columns 36 to 80

Complete only the appropriate period field (or fields) as indicated in column 28. This field should contain a "1" under each day that the class meets that period and a "0" (zero) under each day it does not meet. The fields for periods during which the class does not meet should be left blank. These remaining fields will contain zeros, but these will be punched in the cards by the data processing department.

FIGURE 10

SHOWING A TYPICAL CROSS SECTION OF A COMPLETED
SCHEDULE DESCRIPTION SHEET

LINCOLN PUBLIC SCHOOLS										COURSE DESCRIPTIONS										SCHOOL 19 19																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
NUMBER OF SEATS		COURSE CODE		SEC NO		COURSE TITLE		COURSE CREDIT		TEACHER		ROOM NUMBER		PERIOD		DAY CODE		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S		M T W T F S S			

scheduling pass is an updated master schedule and a list of conflicts.

UPDATED MASTER SCHEDULE.

Useful information provided by the run will appear in the following form:

Class Loading Lists. The updated master schedule contains data for each section of each course and the number of conflicted students registered for that course. It lists the number of pupils assigned to each section by the computer, indicates the number of sections that are "closed," lists the variance in numbers of pupils assigned among sections in that same course. (For this information to be of value to the principal he must exercise extreme care in determining that the listing of data for each sections corresponds exactly to his master schedule.) A portion of an updated master schedule is displayed as Figure 11.

LIST OF CONFLICTS.

Included as a part of the first scheduling pass is a print-out of all conflicts. Figure 12 shows a listing of conflicts and a key to interpreting the listing of conflicts.

By carefully comparing the list of conflicts with information derived from the updated master schedule, knowledge may be gained as to the reason for the conflicts and how the conflicts may be resolved. Direct conflicts may be handled through counseling. "Rejects" due to closed sections may be handled later through File Maintenance.

FIGURE 11

SHOWING A PORTION OF AN UPDATED MASTER SCHEDULE

COURSE CODE	SEM	COURSE DESCRIPTION	MAST	NO. OF SECTIONS	AVL. SEATS	OPEN SECTIONS	STILL REQUESTS	SCHED. STUDENTS	CONFLICT STUDENTS
214	2	7 ENGLISH	050	8		7	246	246	
COURSE CODE		SECTION DESCRIPTION	MAST	AVL. SEATS	MTWTF	MTWTF	MTWTF	MTWTF	MTWTF
214	7	ENGLISH	CRA2C4	1 35	1	11111			
214	7	ENGLISH	CRA2C4	2 35	2	11111			
214	7	ENGLISH	CRA2C4	3 35	3	11111			
214	7	ENGLISH	CRA2C4	4 35	4	11111			
214	7	ENGLISH	CRA2C4	5 35	5	11111			
214	7	ENGLISH	RAM211	6 35	6	11111			
214	7	ENGLISH	RAM211	7 35	7	11111			
214	7	ENGLISH	RAM211	8 35	8	11111			
		COURSE TOTAL		280	31				1 SECTION CLOSED
COURSE CODE	SEM	COURSE DESCRIPTION	MAST	NO. OF SECTIONS	AVL. SEATS	OPEN SECTIONS	STILL REQUESTS	SCHED. STUDENTS	CONFLICT STUDENTS
216	2	7 ENGLISH	050	1		1	31	31	
COURSE CODE		SECTION DESCRIPTION	MAST	AVL. SEATS	MTWTF	MTWTF	MTWTF	MTWTF	MTWTF
216	7	ENGLISH	RAM211	1 35	4	7 11111			
		COURSE TOTAL		35	4				
COURSE CODE	SEM	COURSE DESCRIPTION	MAST	NO. OF SECTIONS	AVL. SEATS	OPEN SECTIONS	STILL REQUESTS	SCHED. STUDENTS	CONFLICT STUDENTS
229	2	8 ENGLISH	050	8		7	248	248	
COURSE CODE		SECTION DESCRIPTION	MAST	AVL. SEATS	MTWTF	MTWTF	MTWTF	MTWTF	MTWTF
229	8	ENGLISH	BUR2C2	1 35	2	11111			
229	8	ENGLISH	LEG2C5	2 35	2	11111			
229	8	ENGLISH	LEG2C5	3 35	3	11111			
229	8	ENGLISH	LEG2C5	4 35	4	11111			
229	8	ENGLISH	LEG2C5	5 35	5	11111			
229	8	ENGLISH	ROG116	6 35	6	11111			
229	8	ENGLISH	ROG116	7 35	7	11111			
229	8	ENGLISH	ROG116	8 35	8	11111			
		COURSE TOTAL		280	32				

FIGURE 12

SHOWING A LIST OF CONFLICTS FOR
JUNIOR HIGH SCHOOL STUDENTS

IDENTIFICATION			REQUESTS											PAGE
ADDR	REQ	REM	LUN	PERIODS										
715495204	MASON, PAMELA J	09F16	427601	155401	295601	364405	696405	525204	53600					
11499	07	01		11111	11111	11111	11111	11111	00000	00000	00000	00000	00000	00000
720898214	BENNETT, JEFFREY	08M16	331801	87400	762001	192001	577805	696405	222802	482003				
11883	08	01		10101	11111	11111	11111	11111	11111	00001	00000	00000	00000	00000
722937115	FRIESEN, ARLYN A	08M16	331801	87400	762001	192001	677804	496404	222802	582008				
12027	08	01		10101	11111	11111	11111	11111	11111	00001	00000	00000	00000	00000
73112360	BRUNER, JOHN F	07M16	133601	650201	721601	85000	390201	570205	460400	280201				
12654	08	01		11111	01010	11111	11111	11111	11111	00010	00000	00000	00000	00000
73235860	EMBREE, DOUGLAS	007M16	133601	650201	721601	85000	390202	570205	260403	480209				
12765	08	01		11111	01010	11111	11111	11111	11111	00010	00000	00000	00000	00000
73930060	WELLS, JANET M	07F16	331801	85600	444002	691003	560406	121401	280201					
13341	07	01		11111	11111	11111	11111	01010	05000	00010	00000	00000	00000	00000

INTERPRETATION

Ident Number	Alpha	Disk Address	Grade	Sex	School Code	Period	Request	Section	Conflict		
715495204	MASON	PAMELA J	09	F16	427601	155401	295601	366405	696405	525204	83600
11499	07	01			11111	11111	11111	11111	11111	11111	00000

INTERIM ADJUSTMENT PERIOD

Spring registration, early construction of a master schedule and program updating permits the principal to regard the summer recess as an interval in which adjustments on student programs and on the master schedule may be made.

STUDENT PROGRAM ADJUSTMENT.

Student requests which were not scheduled because of direct conflicts or invalid course codes, or were rejected because of seating limitations imposed by the principal may be resolved during this time.

Direct conflicts, obviously, necessitate counseling and the selection of different course offerings which fit into the master schedule.

Requests for student program changes should be made on Form EDP-6802. Since a new card will be punched for each student program change, Form EDP-6802 should record the complete program request of the student and not just the changes. Figure 13 shows the correct way to request pupil program changes.

If pupil program changes reach proportions where whole sections are involved, it is suggested that there is some advantage in completing new Course Request Forms for the students involved.

MASTER SCHEDULE ALTERATION.

At this point in the scheduling procedure, the principal has the distinct advantage of evaluating his schedule and making changes as might make it more workable. Improvement may be accomplished by opening new sections to level the class load or by closing out sections in which there is not sufficient registration.

The principal may also wish to change teacher assignment and/or

room assignments for certain subjects. Consideration of the flow of student traffic between classes, fire exit routines, lunchroom facility scheduling and noon hour supervision are usual considerations in contemplated changes. Any changes in the master schedule should be requested on a completed course description sheet (see Figure 10). New course description cards will be punched for these sections in which changes are involved.

FINAL SCHEDULING RUN

Prior to the final run the possibility still exists to enter additional student requests by punching additional machine-readable cards, to make adjustments on the master schedule which may have been invoked by changes in registration or changes in personnel and to resolve any conflicts which may have occurred. Also, in instances where it can be determined that students have left the district, registration cards may be removed, making the student population current with the opening of school. The final scheduling run will result in:

STUDENT SCHEDULES.

One original and three copies of each student's schedule is provided to the school-- two office copies (one yellow, one white), one counselor's copy (blue), and one student copy (pink). An example of a completed student schedule is displayed as Figure 14.

UPDATED MASTER SCHEDULE.

The updated master schedule provided will again report for each section of the master schedule the number of requests for that subject, the number of student conflicts, the number of available seats remaining in each section and the number of sections closed. (See Figure 11).

FIGURE 14

SHOWING SAMPLE OF STUDENT SCHEDULE

FIRESTONE JIMMIE		M	10	682832	1966	SOUTHEAST	
NAME	SEX	GRADE	ALPHA	STUDENT CODE	YEAR	ER	SCHOOL
CODE	COURSE	TEACHER	PERIOD	ROOM	* SEM CODE	DAYS	
201	ENGLISH 4	RSH	1	263		MTWTF	
703	BIOLOGY 2	BGT	2	171		MTWTF	
740	WORLD HISTORY	REI	3	149		MTWTF	
609	GEOMETRY 2	BAK	4	225		MTWTF	
752	10 GUIDANCE	WSN	5	115		T F	
775	HEALTH ED	TRM	5	165		M T	
999	STUDY HALL		5	AUD		W	
441	WOODWORK 2	WSR	6	123		MTWTF	
FIRESTONE JIMMIF							10

STUDENT'S SCHEDULE

* SEMESTER CODE

1 - FIRST SEMESTER ONLY
 2 - SECOND SEMESTER ONLY
 3 - FIRST SEMESTER OF A TWO SEMESTER COURSE

TO THE STUDENT

IT IS REQUIRED THAT YOU TAKE THIS COPY OF YOUR SCHEDULE WITH YOU WHEN YOU REPORT TO THE CLASSES LISTED HEREON

OFFICE COPY

LIST OF CONFLICTS.

Those students who could not be scheduled within the limits of the master schedule and the class limits set by the principal will appear as conflicts.

File Maintenance Run. At this juncture, the errors, rejects or conflicts may be resolved by the File Maintenance Run. This is a force routine which enables the administrator to update the computer records thereby completing conflict-free schedules for all students. Updating the computer records is accomplished by implementing a series of "take from" (F) and "transfer to" (T) orders given the machine by the computer operator. Decisions for the orders are made by the principal who, after using the list of printed conflicts (see Figure 12) and the updated master schedule (see Figure 11) for reference, may request the computer to remove a course request from a student record and transfer that student to a different course and section.

Requests for program changes which will resolve conflicts under the File Maintenance Run must be submitted on Form EDP-6805 which appears as Figure 15. Instructions for using Form EDP-6805 are printed under Figure 16.

STUDENT CLASS CARD.

The final scheduling run will also produce a card for each student for each subject for which the student is registered. It is this production card which makes possible the added service of

FIGURE 15

FORM EDP-6805 USED TO REQUEST PROGRAM CHANGES
DURING FILE MAINTENANCE RUN

FORM EDP-6805

PROGRAM CHANGEL REQUESTS FOR FILE MAINTENANCE RUN

SCHOOL _____

PAGE ____ OF ____

Ident. No. _____

Name of Student _____

		Course		Course		Course		Course		Course	
		Code & Sect.		Code & Sect.		Code & Sect.		Code & Sect.		Code & Sect.	
Disk Address	From	F		CC	F			F			F
	To	T			T			T			T

Ident. No. _____

Name of Student _____

		Course		Course		Course		Course		Course	
		Code & Sect.		Code & Sect.		Code & Sect.		Code & Sect.		Code & Sect.	
Disk Address	From	F		CC	F			F			F
	To	T			T			T			T

Ident. No. _____

Name of Student _____

		Course		Course		Course		Course		Course		
		Code & Sect.		Code & Sect.		Code & Sect.		Code & Sect.		Code & Sect.		
Disk Address	From	F		CC	F			F			F	
	To	T			T			T			T	

Ident. No. _____

Name of Student _____

		Course		Course		Course		Course		Course	
		Code & Sect.		Code & Sect.		Code & Sect.		Code & Sect.		Code & Sect.	
Disk Address	From	F		CC	F		F		F		F
	To	T		T		T		T		T	

FIGURE 16

SHOWING A SEQUENCE OF INSTRUCTIONS TO BE USED
IN REQUESTING PROGRAM CHANGES UNDER
THE FILE MAINTENANCE RUN

INSTRUCTIONS FOR USING FORM EDP-6805:

1. Enter the name of the school.
2. Enter the student identification number and the pupil's name in the spaces provided.
3. Enter the disk address. (Consult Interpretation, Figure 12 to locate this five digit number).
4. After the letter "F," enter the three digit course code of the subject to be changed, and the section of the course to be changed. (CC in case of conflict).
5. After the letter "T," enter the course code and section number which is to be punched for input to the file change program.

Note: If more than the five spaces provided are necessary to complete the program change request, continue on the next line.

the class roster and the possibility of grade reporting by computer.

PROCEDURE FOR SECOND SEMESTER

The procedures for second semester scheduling are the same as for the first semester. In most instances the procedure begins with the process of updating registration. This process can be accomplished near the end of the first month of school when the enrollment has stabilized, program changes have been effected and class sections have been balanced.

Project ADMIRE has attempted to place in the hands of the principal and his staff an effective, efficient system covering the registration and scheduling of secondary school students. It is inevitable that ambiguities will arise, that inconsistencies may occur, that modifications of form and process will be made and that supplementary information will have to be provided.

The success of this program depends in large measure on planning and completing a Spring registration. It is also imperative that students be informed that the selection of courses they make in the Spring is final with very few exceptions. Some of the more obvious exceptions are program changes due to failures to be made up, attendance at summer school and such changes in the Fall as determined on their respective merits by the principal. The ultimate success, however, lies in attention to detail, to careful planning and to consistent quality in forms completed and raw material provided for use by the Data Processing Center.

APPENDIX A

JUNIOR HIGH SCHOOL COURSE OFFERING
Lincoln Public Schools

(100) MISCELLANEOUS			
First Sem	Second Sem	Both Sem	Course Titles
111	121		Assistant - - Library or Student Assistant Period 1
112	122		Assistant - - Library or Student Assistant Period 2
113	123		Assistant - - Library or Student Assistant Period 3
114	124		Assistant - - Library or Student Assistant Period 4
115	125		Assistant - - Library or Student Assistant Period 5
116	126		Assistant - - Library or Student Assistant Period 6
110	120		Assistant - - Library or Student Assistant Period 0
(200) ENGLISH			
Optional Period			
g7 001 002 003			
q8 005 006 007			
g9 009 010 011			
201	202	203	7 English - - 7th grade English
205	206	207	7 English - - 7th grade English High Achievement Level
209	210	211	7 English - - 7th grade English Low Achievement Level
		212	7 Reading - - 7th grade Reading
213	214	215	7 English - - 7th grade Project English
217	218	219	7 English - - 7th grade Project English High Achievement Level
221	222	223	7 SpecEd Eng- 7th grade English Special Education
		224	7 Read-S - - 7th grade Reading Special Education
225	226	227	8 English - - 8th grade English
229	230	231	8 English - - 8th grade English High Achievement Level
233	234	235	8 English - - 8th grade English Low Achievement Level
		236	8 Reading - - 8th and/or 9th grade English
237	238	239	8 Reading - - 8th grade Project English
241	242	243	8 English - - 8th grade Project English High Achievement Level
245	246	247	8 SpecEd Eng- 8th grade English Special Education
		248	8 Read-S - - 8th grade Reading Special Education
249	250	251	9 English - - 9th grade English
253	254	255	9 English - - 9th grade English High Achievement Level
257	258	259	9 English - - 9th grade English Low Achievement Level
261	262	263	9 English - - 9th grade Project English
265	266	267	9 English - - 9th grade Project English High Achievement Level
269	270	271	9 SpecEd Eng- 9th grade English Special Education
		272	9 Read-S - - 9th grade Reading Special Education

(200) LITERATURE - SPEECH - JOURNALISM
Optional Period

013 014

015 016

017 018

273	274	Literature- - 8th grade Literature
275	276	Literature- - 7th and/or 8th and/or 9th grade Literature
277	278	Literature- - 9th grade Literature
279	280	Speech - - 7th grade Speech 1
281	282	Speech - - 8th grade Speech 1
283	284	Speech 1 - - 9th grade Speech 1
285	286	Speech 1 - - 7th and/or 8th and/or 9th grade Speech 1
287	288	Speech 2 - - 8th and/or 9th grade Speech 2
289	290	Journalism- - 8th and/or 9th grade Journalism
291	292	Journ Eng - - 9th grade Journalism & English-double period
293	294	Drama - - Beginning Drama
295	296	Drama 2 - - Drama 2
297	298	Speech Eng- - 9th grade Communicative Arts, Speech, English and Creative Writing

(300) INSTRUMENTAL MUSIC
Optional Period

083 084

085 086

087 088

301	302	Beg Inst - - Beginning Instruments
307	308	Inst Music- - Instrumental Music
309	310	Beg Band - - Beginning Band
	311	Prep Band - - Prep Band
	313	Band - - Band
	315	Prep Orch - - Prep Orchestra
	317	Orchestra - - Orchestra
321	322	Ensemble - - Advanced Ensembles
323	324	Mus App - - Music Appreciation

(300) VOCAL MUSIC
Optional Period

089 090

091 092

093 094

335	336	337	7b Chorus - - 7th grade Boys Chorus
339	340	341	7g Chorus - - 7th grade Girls Chorus
351	352	353	8b Chorus - - 8th grade Boys Chorus
355	356	357	8g Chorus - - 8th grade Girls Chorus
359	360	361	b Chorus - - 7th, 8th, 9th grade Boys Chorus
363	364	365	g Chorus - - 7th, 8th, 9th grade Girls Chorus

367	368	369	b Chorus - - 8th and 9th grade Boys Chorus	33
371	372	373	g Chorus - - 8th and 9th grade Girls Chorus	
375	376	377	9b Chorus - - 9th grade Boys Chorus	
379	380	381	9g Chorus - - 9th grade Girls Chorus	
387	388	389	Ad Choral - - Advanced Chorus for Selected Pupils	
391	392	393	Mus App - - Music Appreciation	

(400) INDUSTRIAL ARTS

Optional Period

053 054

055 056

057 058

401	402	Ind Arts - - 7th grade Introduction to Industrial Arts
403	404	Woodwork - - 8th grade Beginning Woodwork
405	406	Woodwork - - 8th and/or 9th grade Beginning Woodwork
407	408	Woodwork - - 8th and/or 9th grade Advanced Woodwork
409	410	Metals 1 - - 8th grade Metal Work 1
411	412	Metals 1 - - 8th and/or 9th grade Metal Work 1
413	414	Metals 2 - - 8th and/or 9th grade Metal Work 2
415	416	Drafting 1- - 8th grade Drawing
417	418	Drafting 1- - 8th and/or 9th grade Beginning Drawing
419	420	Drafting 2- - 8th and/or 9th grade Advanced Drawing 2
421	422	Electronics - 8th grade Beginning Electricity & Electronics
423	424	Electronics - 8th and/or 9th grade Beginning Electricity and Electronics
425	426	Electronics - 8th and/or 9th grade Advanced Electricity and Electronics
427	428	Crafts 1 - - 8th grade Industrial Crafts 1
429	430	Crafts 1 - - 8th and/or 9th grade Industrial Crafts 1
431	432	Crafts 2 - - 8th and/or 9th grade Industrial Crafts 2
433	434	5M Engines- - Small Engines
475	476	SpEd IA - - 7th grade Industrial Arts Special Education
485	486	SpEd IA - - 8th grade Industrial Arts Special Education
495	496	SpEd IA - - 9th grade Industrial Arts Special Education

(400) HOME ECONOMICS

Optional Period

059 060

061 062

439	440	Home Ec - - 7th grade Home Economics
441	442	Home Ec - - 8th grade Home Economics
443	444	Home Ec - - 9th grade Home Economics
445	446	Home Ec b - - 9th grade Home Economics for Boys
447	448	SpEd HE - - 7th grade Home Economics Special Education
449	450	SpEd HE - - 8th grade Home Economics Special Education
451	452	SpEd HE - - 9th grade Home Economics Special Education

(500) ART
Optional Period
095 096

501	502	7 Art 1	- - 7th grade Beginning Art
503	504	7 Art 2	- - 7th grade Art 2
505	506	Art 1	- - 8th and/or 9th grade Art 1
507	508	Art 2	- - 8th and/or 9th grade Art 2
509	510	Art 3	- - 8th and/or 9th grade Art third semester
511	512	Art 4	- - 8th and/or 9th grade Art fourth semester
513	514	Art 5	- - 9th grade Art fifth semester
515	516	Art 6	- - 9th grade Art sixth semester
517	518	Art 1	- - 7th and 8th grade Beginning Art
519	520	Art 1	- - 7th, 8th, 9th grade Beginning Art
521	522	Art 2	- - 7th, 8th, 9th grade Art 2
523	524	SpEd Art	- - Art - Special Education

(500) FOREIGN LANGUAGE

531	532	533	French 1	- - 7th grade Beginning Conversational French
535	536	537	French 1	- - 7th grade Conversational French 1 for pupils with elementary school French
539	540	541	French 2	- - 8th grade Second Year Conversational French 2
543	544	545	French 1-2-	- - 9th grade Beginning French
547	548	549	French 3-4-	- - 9th grade Second Year French
551	552	553	Spanish	- - 9th grade Beginning Spanish
555	556	557	German	- - 9th grade Beginning German

(600) MATHEMATICS
Optional Period
g7 035 036 037
g8 039 040 041
g9 043 044 045

601	602	603	7 Math	- - 7th grade Arithmetic
605	606	607	7 Math	- - 7th grade Arithmetic High Achievement Level
609	610	611	Geometry	- - Geometry
613	614	615	SpEd Math	- - 7th grade Arithmetic Special Education
617	618	619	8 Math	- - 8th grade Arithmetic
621	622	623	8 Math	- - 8th grade Arithmetic High Achievement Level
625	626	627	8 Math	- - 8th grade Arithmetic Low Achievement Level
629	630	631	Beg Alg	- - 8th grade Algebra for Accelerated Pupils
633	634	635	8 SpEd Math	- 8th grade Arithmetic Special Education
637	638	639	9 Math	- - 9th grade General Mathematics
641	642	643	Beg Alg	- - 9th grade Beginning Algebra
645	646	647	Adv Alg	- - 9th grade Advanced Algebra
649	650	651	SpEd Math	- - 9th grade Arithmetic Special Education

(700) SCIENCE
Optional Period

g7 047 048

g8 049 050

g9 051 052

701	702	7 Life Sci-	- 7th grade Life Science
703	704	7 Life Sci-	- 7th grade Life Science High Achievement Level
705	706	7 SpEd Sci-	- 7th grade Science Special Education
707	708	8 Earth Sci	- 8th grade Earth Science
709	710	8 Earth Sci	- 8th grade Earth Science High Achievement Level
711	712	8 Earth Sci	- 8th grade Earth Science Low Achievement Level
713	714	8 SpEd Sci-	- 8th grade Science Special Education
715	716	Space Sci	- - 8th and/or 9th grade Air Space Science
717	719	9 PhySci 1-	- 9th grade Physical Science 1
	718	9 PhySci 2-	- 9th grade Physical Science 2
725	726	727 Int Phy Sci	- Introductory Physical Science

(800) SOCIAL STUDIES

Optional Period

g7 023 024 025

g8 027 028 029

g9 031 032 033

801	802	803 Am Studies-	- 7th grade American Studies
805	806	807 Am Studies-	- 7th grade American Studies High Achievement Level
809	810	811 Am Studies-	- 7th grade American Studies Low Achievement Level
813	814	815 Soc St Sp	- - 7th grade Social Studies Special Education
817	818	819 Am Studies-	- 8th grade American Studies
821	822	823 Am Studies-	- 8th grade American Studies High Achievement Level
825	826	827 Am Studies-	- 8th grade American Studies Low Achievement Level
829	830	831 Soc St Sp	- - 8th grade Social Studies Special Education
833	834	835 W Studies	- - 9th grade World Studies
837	838	839 W Studies	- - 9th grade World Studies High Achievement Level
841	842	843 W Studies	- - 9th grade World Studies Low Achievement Level

(800) ORIENTATION and EDUCATIONAL PLANNING

Optional Period

075 076 077

078 080 081

851	852	853 7 Orient A-	- 7th grade Orientation A (M-W-F first week)
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(800) ORIENTATION and EDUCATIONAL PLANNING

Optional Period

075 076 077

079 080 081

851	852	853	7 Orient A - - 7th grade Orientation A (M-W-F first week)
855	856	857	7 Orient B - - 7th grade Orientation B (T-R first week)
859	860	861	8 Ed Plan - - 8th grade Educational Planning A (M-W-F first week)
863	864	865	8 Ed Plan - - 8th grade Educational Planning B (T-R first week)
867	868	869	Orient Sp - - Special Education Orientation

(800) ENGLISH and AMERICAN STUDIES

Optional Period

019 020 021

881	882	883	Eng Am St - - Two period block 7th grade English and American Studies
885	886	887	Eng Am St - - Two period block 7th grade English and American Studies High Achievement Level
889	890	891	Eng Am St - - Two period block 7th grade English and American Studies Low Achievement Level

(900) PHYSICAL EDUCATION

Optional Period

063 064 065

067 068 069

071 072 073

90	902	903	7 Ph EdbA - - 7th grade Physical Education Boys A (T-R first week)
905	906	907	7 Ph EdbB - - 7th grade Physical Education Boys B (M-W-F first week)
909	910	911	7 Ph EdgA - - 7th grade Physical Education Girls A (T-R first week)
913	914	915	7 Ph EdgB - - 7th grade Physical Education Girls B (M-W-F first week)
917	918	919	8 Ph EdbA - - 8th grade Physical Education Boys A (T-R first week)
921	922	923	8 Ph EdbB - - 8th grade Physical Education Boys B (M-W-F first week)
925	926	927	8 Ph EdgA - - 8th grade Physical Education Girls A (T-R first week)
929	930	931	8 Ph EdgB - - 8th grade Physical Education Girls B (M-W-F first week)
933	935		Health - - Health Education 8th and 9th grade
935	936	937	9 Ph Ed b - - 9th grade Physical Education Boys A
939	940	941	9 Ph Ed b - - 9th grade Physical Education Boys B
943	944	945	9 Ph Ed b - - 9th grade Physical Education Boys

947	948	949	9 Ph Ed g - - 9th grade Physical Education Girls A
951	952	953	9 Ph Ed g - - 9th grade Physical Education Girls B
955	956	957	9 Ph Ed g - - 9th grade Physical Education Girls

(900) TYPING
Optional Period 099

961		Typing 1 - - 8th grade Typing 1
	962	Typing 2 - - 8th grade Typing 2
963		Typing 1 - - 9th grade Typing 1
	964	Typing 2 - - 9th grade Typing 2
965	966	SpEd Typ - - Typing - Special Education

APPENDIX B

SENIOR HIGH SCHOOL COURSE OFFERINGS
Lincoln Public Schools(001-099) SPECIAL PURPOSE

First Sem	Second Sem	Both Sem	Course Titles
010	020		Assistant - - Asst. Period Unassigned
011	021		Assistant - - Asst. Office
012	022		Assistant - - Asst. Library
013	023		Assistant - - Asst. Lang. Lab.
014	024		Assistant - - Asst. Nurse
015	025		Assistant - - Asst. Audic-Visual
016	026		Assistant - - Asst. Counselor
017	027		Assistant - - Asst. Teacher
		070	Employment- - Spec. Employment
		080	Athletics - - Baseball
		081	Athletics - - Basketball
		082	Athletics - - Cross Country
		083	Athletics - - Football
		084	Athletics - - Gymnastics
		085	Athletics - - Golf
		086	Athletics - - Swimming
		087	Athletics - - Tennis
		088	Athletics - - Track
		089	Athletics - - Wrestling

(100) BUSINESS EDUCATION

101	102		Bus Prin - - General Business 1, 2
107	108		Cler Rekg- - Clerical Record Keeping 1, 2 Vocational
111	112		Typing - - Typing 1, 2 Vocational
113	114		Typing - - Typing 1, 2 Non-vocational
115	116		Typing - - Typing 3, 4 Vocational
		131	Shorthand - - Shorthand 1, 2 Vocational
		133	Shorthand - - Shorthand 3, 4 Vocational
		135	Steno Tr - - Stenographic Training 1, 2 Vocational
		137	Cler Tr - - Clerical Training 1, 2 Vocational
161	162		Bus Prin - - Advanced Business Practices 1, 2
163	164		Bus Prin - - Advanced Business Management 1, 2

(200) ENGLISH

201	202	203	English - - English 3, 4
213	214	215	Eng Proj - - English 3, 4 Project
		221	Jr Comp - - Junior Composition
		231	Eng Proj - - 11 English Project

- 237 Eng Proj - - 12 English Project
 241 Sr Comp - - Senior Composition 1, 2
 253 Creat Wri - - Creative Writing
 261 Am Lit - - American Literature 1, 2
 263 Eng Lit - - English Literature 1, 2
 267 Gen Lit - - General Literature 1
 271 Speech - - Speech 1
 273 Drama - - Drama 1
 275 Debate - - Debate 1, 2
 277 278 Journalism- - Journalism 1
 295 Read Imp - - Reading Improvement
 297 Sr Comp - - Senior Composition

(300) FINE ARTS

- 301 Art Apprec- - Art Appreciation
 303 Des-Crafts- - Design & Crafts 1, 2
 307 Ele Design- - Elementary Design 1, 2
 309 Draw-Paint- - Drawing & Painting 1, 2
 311 Draw-Paint- - Drawing & Painting 3, 4
 313 Comm Art - - Commercial Art
 335 Prep Band - - Prep. Band 1, 2
 337 Adv Band - - Adv. Band 1, 2
 341 Adv Orch - - Adv. Orchestra 1, 2
 353 Chorus - - Chorus
 355 Boys Glee - - 10 Boys Glee 1, 2
 357 Girls Glee- - 10 Girls Glee 1, 2
 359 Boys Glee - - 11 Boys Glee 1, 2
 361 Girls Glee- - 11 Girls Glee 1, 2
 369 Choir - - Choir 1, 2
 371 Girls Oct - - Girls Octet 1, 2
 373 Boys Oct - - Boys Octet 1, 2
 375 G Voice - - Girls Voice 1, 2
 377 B Voice - - Boys Voice 1, 2
 379 Madrigal - - Madrigal 1, 2
 381 Mus Appr - - Music Appreciation
 383 Mus Theory- - Music Theory 1, 2

(400) HOME ECONOMICS, INDUSTRIAL ARTS, TRADES

- 401 Cloth-Text- - Clothing & Textiles 1, 2
 403 Cloth-Text- - Clothing & Textiles 3, 4
 405 Food-Nutr - - Foods & Nutrition 1, 2
 407 Food-Nutr - - Foods & Nutrition 3, 4
 409 Home Plan - - Home Planning & Decorating
 411 Homemaking- - Homemaking 1, 2
 415 Agriculture - Voc. Agriculture
 423 Mech Draft- - Mechanical Drafting 1, 2
 425 Arch Draft- - Architectural Drafting 1, 2
 427 Tech Draft- - Trades Technical Drafting 1, 2
 431 Electronic- - Electronics 1

433 Sm Engines- - Small Engines 1, 2
 435 Electronic- - Electronics 2, 3
 437 Computer - - Computer 1, 2
 441 Woodwork - - Woodwork 1
 443 Woodwork - - Woodwork 2, 3
 445 Woodwork - - Woodwork 4, 5
 451 Printing - - Printing 1
 453 Printing - - Printing 2, 3
 455 Printing - - Printing 4, 5
 461 Machine - - Machine 1
 463 Machine - - Machine 2, 3
 465 Machine - - Machine 4, 5
 471 Eng Mech - - Engine Mechanics 1
 475 Auto Mech - - Auto Mechanics 2, 3
 477 Auto Mech - - Auto Mechanics
 481 Auto Orien- - 10th Grade Block, Machine, Electronics,
 Engine Mechanics, Auto Mechanics
 483 Gr Art Ori- - 10th Grade Block, Woodwork, Printing,
 Industrial Crafts, Engine Mechanics
 491 Ind Crafts- - Industrial Crafts
 493 Homemaking- - Homemaking 1x, 2x
 495 Food Nutr - - Foods & Nutrition 1x, 2x
 497 Woodwork - - Woodwork 1x, 2x
 499 Cloth-Text- - Clothing & Textiles 1x, 2x

(500) FOREIGN LANGUAGE

501 French - - French 1, 2
 505 French - - French 3, 4
 509 French - - French 5, 6
 511 French - - French 7, 8
 521 German - - German 1, 2
 525 German - - German 3, 4
 527 German - - German 5, 6
 529 German - - German 7, 8
 541 Latin - - Latin 1, 2
 543 Latin - - Latin 3, 4
 545 Latin - - Latin 5, 6
 561 Spanish - - Spanish 1, 2
 565 Spanish - - Spanish 3, 4
 569 Spanish - - Spanish 5, 6
 571 Spanish - - Spanish 7, 8

(600) MATHEMATICS

603 Math - - Secondary Mathematics 1, 2
 605 Algebra - - Algebra 1, 2 N
 607 Algebra - - Algebra 1, 2 A
 609 Geometry - - Geometry 1, 2 N
 611 Geometry - - Geometry 1, 2 A

613 Algebra - - Algebra 3, 4 N
 615 Algebra - - Algebra 3, 4 A
 617 Algebra - - Algebra 5
 619 Trig - - Trigonometry N
 621 Trig - - Trigonometry A
 623 Analy Geom- - Analytical Geometry N
 625 Analy Geom- - Analytical Geometry A
 627 Math Analy- - Mathematical Analysis
 691 Math - - Mathematics 1x, 2x

(700) SCIENCE

701 Science - - Science 1, 2
 703 Biology - - Biology 1, 2 N
 705 Biology - - Biology 1, 2 A
 707 Physiology- - Physiology 1, 2
 721 Physics - - Physics 1, 2 N
 723 Physics - - Physics 1, 2 A
 731 Chemistry - - Chemistry 1, 2
 737 Chemistry - - Chemistry 3, 4
 791 Biology - - Biology 1x, 2x

(800) SOCIAL STUDIES

801 Wrld Studies- World Studies 1, 2 N
 802 Wrld Studies- World Studies 2 N
 803 Wrld Studies- World Studies 1, 2 A
 806 Wrld Studies- World Studies 2 R
 821 Am History- - American History 1, 2 A-N
 822 Am History- - American History 2 A-N
 825 Am History- - American History 1, 2 R
 826 Am History- - American History 2 R
 829 Modrn Prob- - Modern Problems N
 831 Modrn Prob- - Modern Problems A
 833 Modrn Prob- - Modern Problems R
 841 Intnat Rel- - International Relations
 843 Economics - - Economics
 849 Psychology- - Psychology
 859 Religion - - Religion
 845 Sociology - - Sociology
 847 Civics - - Civics
 893 Am History- - American History 1x, 2x
 895 Wrld Geog - - World Geography 1x, 2x
 897 Modrn Prob- - Modern Problems x
 899 Soc Living- - Social Living 1x, 2x

(900) PHYSICAL EDUCATION, HEALTH, DRIVER EDUCATION, MISCELLANEOUS

901 Phys Ed - - Boys Phys. Ed.
 902 Phys Ed - - Boys Phys. Ed.

	921	Swimming	- -	Beginning Swimming-Boys
	922	Swimming	- -	Advanced Swimming-Boys
	941	Phys Ed	- -	Girls Phys. Ed.
	942	Phys Ed	- -	Girls Phys. Ed.
961	962	Health Ed	- -	Health Education
967	968	Driver Ed	- -	Driver Education
	975	Stagecraft-	- -	Stagecraft 1, 2
	991	Studnt Cou-	- -	Student Council 1, 2

(860-889) GUIDANCE

861	Guidance	- -	10th Guidance
863	Guidance	- -	10th Guidance
865	Guidance	- -	10th Guidance
867	Guidance	- -	10th Guidance
869	Guidance	- -	10th Guidance x
871	Guidance	- -	11th Guidance
873	Guidance	- -	11th Guidance
875	Guidance	- -	11th Guidance
877	Guidance	- -	11th Guidance
879	Guidance	- -	11th Guidance x
881	Guidance	- -	12th Guidance
883	Guidance	- -	12th Guidance
885	Guidance	- -	12th Guidance
887	Guidance	- -	12th Guidance
889	Guidance	- -	12th Guidance x

END

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